Tillett & Hönig 738-535. Trujillo: Ruiz-Terán & López-Figueiras 2247; Steyermark 97280. In a personal communication to me he lists the common names, "cancha", "gallinazo", "humo", "sacaojo", and "salvio".

Additional citations: COLOMBIA: Valle del Cauca: Cuatrecasas 20471 (W--2817824).

LIPPIA SCHOMBURGKIANA Schau.

Additional synonymy: Lippia schomburgkiana Moldenke, in herb.

Additional bibliography: López-Palacios, Fl. Venez. Verb. 418, 450—452, & 651, fig. 106. 1977; Moldenke, Phytologia 40: 62—63. 1978.

Illustrations: López-Palacios, Fl. Venez. Verb. [451], fig. 106. 1977.

López-Palacios (1977) comments that "Schauer....dice que es afín, pero distinta, a L. glandulosa Schauer, pero yo la considero mucho más cercana a L. origanoides H.B.K., de algunas de cuyas formas quizás sólo varía en rango infraespecífico, pues la única diferencia que se les observa es el olor." He cites from Venezuela the following collections: Bolívar: Connel & Quelch 2; ImThurn 52; Irwin 402; Ruiz-Terán & López-Palacios 11415.

LIPPIA TURBINATA Griseb.

Additional bibliography: Markgraf & D'Antoni, Pollen Fl. Argent. 25, 98, 112, & 115, pl. 42-362. 1978: Moldenke, Phytologia 40: 201. 1978.

Additional illustrations: Markgraf & D'Antoni, Pollen Fl. Argent. pl. 42-362. 1978.

The pollen of this species is illustrated and described by Markgraf & D'Antoni (1978).

LIPPIA UMBELLATA Cav.

Additional bibliography: Moldenke, Phytologia 40: 68, 69, 73, & 80—82. 1978.

Jones encountered this plant at the edges of barrancas.

The Calzada 2170, distributed as L. umbellata, actually is L. pringlei Briq.

Additional citations: MEXICO: Morelos: G. N. Jones 23258 (Ld).

- - - - - - - - - - - - - - - -

ADDITIONAL NOTES ON THE GENUS VERBENA. XXVIII

Harold N. Moldenke

VERBENA [Dorst.] L.

Additional synonymy: Verbena [Bauhin] L. ex Malag. Heras.,

Act. Phytotax. Barcin. 18: 108. 1976.

Additional & emended bibliography: Ligamine, Herb. Ampuleius. 1481; Bondt, Hist. Nat, Med. Ind. Orient. 150--151. 1658; Scop., Ann. Hist. Nat. 4: 56, 57, & 90. 1770; R. Br., Fl. Nov. Holl., imp. 1, 512 (1810) and imp. 2, [Isis 1819:] 154. 1819; Sweet, Hort. Brit., ed. 1, 1: 324 & 325 (1826), ed. 2, 418—419 (1830), and ed. 3, 553 & 768. 1839; Hassk., Cat. Pl. Hort. Bot. Bogor. Cult. Alt. 134. 1844; Darwin, Journ. Res. Voy. Beagle, ed. 2, 40. 1860; H. L. Williams, Poems N. P. Willis 221. 1882; Coult., Contrib. U. S. Nat. Herb. 2: 326—328. 1892; Rojas Acosta, Cat. Hist. Nat. Corrient. 76--77, 173, 193, & 206. 1897; J. C. & M. Willis, Rev. Cat. Flow. Pl. Ceyl. [Perad. Man. Bot. 2:] 142 & 163. 1911; Stafford, Ann. Rep. Smithson. Inst. 1916: 414. 1917; Haines, Bot. Bihar & Orissa, ed. 1, 4: 704 & 707—708. 1922; Hanson, Univ. Nebr. Stud. 24: 24. 1924; Gathorne-Hardy, Wild Fls. Brit. 22 & 120. 1938; Perez-Arbelaez, Pl. Util. Colomb., ed. 1, 441. 1947; E. D. Merr., Journ. Arnold Arb. 31: 277. 1950; Perez-Arbelaez, Pl. Util. Colomb., ed. 2, 744—745. 1956; Haines, Bot. Bihar & Orissa, ed. 2, 2: 738 & 742. 1961; Hepper in Hutchins. & Dalz., Fl. W. Trop. Afr., ed. 2, 2: 432 & 434. 1963; Meikle in Hutchins. & Dalz., Fl. W. Trop. Afr., ed. 2, 2: 437. 1963; Russell, Ann. Ent. Soc. Am. 56: 149—151 & 153. 1963; Gunawardena, Gen. Sp. Pl. Zeyl. 146 & 147. 1968; A. & I. Nehrling, Easy Gard. Drought-resist. Pl., imp. 1, 304. 1968; Rouleau, Guide Ind. Kew. 197. 1970; J. R. Foster in Kalm, Travels N. Am., ed. 2, 67. 1972; Gilmour, Thom. Johnson 31, 50, 78, 106, 107, & 122. 1972; Flook, Sida 5: 169. 1973; Prenis, Herb Growers Guide 50. 1974; Shostek, Flow. & Pl. 278—279. 1974; Asai, Journ. Jap. Bot. 50: 311—316. 1975; García Barriga, Fl. Med. Colomb. 2: 511—514. 1975; Gubanov, Pavlov, & Yunus, Byull. Mosk. Ispyt. Prir. Otd. Biol. 80: 82—91. 1975; Hartmann & Kester, Pl. Prop., ed. 3, 103 & 646. 1975; Hocking, Excerpt. Bot. A.25: 379. 1975; T. Johnson, Gerard Herbal, ed. 3, 254 & 717—719. 1975; Mohlenbrock, Guide Vasc. Fl. Ill. 365—367. 1975; A. & I. Nehrling, Easy Gard. Drought-resist. Pl., imp. 2, 304. 1975; Palmer & Fowler, Fieldb. Nat. Hist., ed. 2, 286—287 & 777. 1975; Sharma, Bull. Bot. Soc. Bengal 29: 143. 1975; Stalter, Castanea 40: 13. 1975; Walls, Compl. Book Greenh. Gard. 378. 1975; Arutyunov, Izv. Akad. Nauk Turkm. SSR. Ser. Biol. Nauk 5: 69. 1976; E. M. Bush, Castanea 41: 304. 1976; Dantas Barreto, Fontes, Ramos Lopes, Rainha, Rozeira, Da Silva, Pinto da Silva, & Teles. Agron. Lusit. 37: 167—188. 1976; Dollenz-A., Anal. Inst. Patag. 7: 163--168, fig. 1. 1976; El-Kifl, El-Dessouki, & El-Khouly, Zeit. Angew. Zool. 63: 1—18. 1976; S. R. Hill, Sida 6: 325. 1976; Hocking, Excerpt. Bot. A.28: 170. 1976; Malag. Heras., Act. Phytotax. Barcin. 18: 108. 1976; Mohlenbrock, Castanea 41: 318. 1976; Tasei, Apidologia 7: [277]—280, 282, 285, 286, 291, 298, & 299, fig. 7e. 1976; Ziegler & Sohmer, Contrib. Herb. Univ. Wisc. LaCrosse 13: 16. 1976; F. J. Anderson, Illustr. Hist. Herb. 27, fig. 10. 1977; Anon., Biol. Abstr. 64: 3023. 1977; Arora, Biol. Abstr. 65: 3288. 1977; Arora, Cytologia Tokyo 42: 653—660. 1977; Baskin & Baskin, Castanea 42:

144. 1977; Burke, Journ. Appl. Ecol. 14: 517. 1977; Clay & Hubbard, Haw. Gard. Trop. Shrubs 185 & 294. 1977; Dantas Barreto, Fontes, Ramos Lopes, Rainha, Rozeira, Da Silva, Pinto da Silva, & Teles, Biol. Abstr. 63: 1849. 1977; DiFulvio, Kurtziana 10: 70 & 71, fig. 1g. 1977; Dight, Biol. Abstr. 64: 2031. 1977; Dight, Exp. Hortic. 29: 65—71. 1977; Greenwood, Proc. Linn. Soc. N. S. Wales 101: 240. 1977; Greller, Bull. Torrey Bot. Club 104: 176. 1977; Gubanov, Pavlov, & Yanus, Biol. Abstr. 64: 710. 1977; Hehre, Rhodora 79: 237. 1977; Hocking, Quart. Journ. Crude Drug Res. 15: [iv]. 1977; Hood, Quart. Journ. Crude Drug Res. 15: 212. 1977; Lelong, Sida 7: [118] & 140. 1977; Lewis & Elvin-Lewis, Med. Bot. 122, 193, 370, 391, & 514. 1977; López-Palacios, Fl. Venez. Verb. 10, 11, 18, 182, 206, 207, 419, 421, 489, 491, 493, 498, 500, 504, 505, 512, 514, 520, 528, 531, 537, 543, 558—578, 646, 649, & 651—654, fig. 131—135. 1977; McGregor & al., Fl. Great Plains 280—282 & 568—569, maps 1118—1126. 1977; G. L. Mill., Bull. Torrey Bot. Club 104: 386 & 387. 1977; Moldenke, Biol. Abstr. 63: 1851—1852 (1977) and 64: 4787, 6574, & 6575. 1977; Moldenke, Phytologia 36: 117—158, 164, 216—250, 451—464, 501, 506, & 511 (1977) and 37: 275 & 512. 1977; A. L. Moldenke, Phytologia 37: 278. 1977; A. R. Moldenke in Thrower & Bradbury, Chile-Calif. Medit. Scrub Atlas 211. 1977; Musselman, Nickrent, & Levy, Rhodora 79: 264. 1977; Nagy & Albert, Act. Phytopath, Acad. Sci. Hung. 12: 303—306. 1977; Noblick, Annot. List Herb. Spec. M. Mitch. Assoc. 178 & 222. 1977; W. J. Park, Park Seeds Fls. & Veg, 1978: 90. 1977; "P.H.V.I.", Biol. Abstr. 64: 3530. 1977; Poppeton, Shuey, & Sweet, Fla. Scient. 40: 384. 1977; Powell, Econ. Bot. 31: 418, 419, & 424, 1977; A. R. Robbins, How Grow Annuals, ed. 2, 44, 82, 85, 181, 186, 200, [211]—216, 284—288, 290, 291, 296, & ad. 1977; K. E. Rogers, Sida 7: 78. 1977; Rogerson, Becker, & Prince, Bull. Torrey Bot. Club 104: 410. 1977; "J.W.S.", Biol. Abstr. 64: 5978. 1977; Speta, Candollea 32: 142, 145—146, & 155, fig. 2 t—w. 1977; O. Stern, Stern's Nurs. Guide Mir. Gard. 18. 1977; Tasei, Apidologia 8: 74. 1977; Tasei, Biol. Abstr. 64: 6635. 1977; J. Taylor, Cat. Vasc. Aquat. Wetl. Pl. Okla. [Herb. SE. Okla. St. Univ. Publ. 1:] 48, 57, & 74. 1977; R. L. Thompson, Castanea 42: 88. 1977; Thompson & Heineke, Trans. Ill. Acad. Sci. 70: 126. 1977; Troncoso & Bacigalupi, Darwiniana 21: 178. 1977; Van der Werff, Bot. Notiser 130: [89] & 96—97. 1977; Anon., Exxon USA 17 (2): 5. 1978; Arora, Biol. Abstr. 66: 2513. 1978; Arora, Cytologia 43: 91—96. 1978; Brink & Mayer, Phytologia 38: 494. 1978; Burke, Biol. Abstr. 65: 771. 1978; Craig, Proc. Fla. State Hortic. Soc. 90: 109. 1978; Dodson & Gentry, Selbyana 4: 578, 580, 581, 605, & 628, pl. 272C. 1978; Dollenz-A., Biol. Abstr. 66: 3131. 1978; Faust, New York Times sec. D, 30, March 5 (1978) and D.40, March 26. 1978; Frankel, Bull. Torrey Bot. Club 105: 154. 1978; Liogier, Moscosoa 1: 38. 1978; Markgraf & D'Antoni, Pollen Fl. Argent. 20, 25, 28, 99, 113, 204, 206, & 207, pl. 42-363 & 42-364. 1978; Mejias, Act. Bot. Venez. 13:

304. 1978; G. L. Mill., Biol. Abstr. 65: 4424. 1978; Mohlenbrock & Ladd, Distrib. Ill. Vasc. Pl. [246], [247], & 276. 1978; Moldenke, Biol. Abstr. 65: 71 (1978) and 66: 1277. 1978; Moldenke, Phytologia 38: 259, 386, 394, 395, 401, 402, 405, 478,479, 489, & 511 (1978), 39: 99, 104, 105, 161, & 512 (1978), and 40: 261, 413, 414, & 417. 1978; A. L. Moldenke, Phytologia 39: 64 & 185 (1978), 40: 361, 468, & 511 (1978), and 41: 132. 1978; Mound & Halsey, Whitefly World 207, 216, 223, 305, & 314. 1978; Nagy & Albert, Biol. Abstr. 66: 1654. 1978; Pirone, Diseas. & Pests Ornament. Pl., ed. 5, 527--528. 1978; Rogerson, Becker, & Prince, Bull. Torrey Bot. Club 105: 84. 1978; Troncoso & Bacigalupo, Biol. Abstr. 66: 3705. 1978; W. H. Warren, Garden 2 (4): 15. 1978.

In the 1975 edition of Gerard's Herbal the Latin-name index (unpaged) refers Verbena to page "778" instead of to p. 718. The Craig (1978) work is mis-dated "1977" on its titlepage. The figure in "The Herbal of Apuleius" (1481) hardly seems to apply to any Verbena species known at that time (the work is supposed to have been composed ca. 400 A.D.) nor do portions of the description which assert that the plant as "Known to the Anglo-Saxons as Ash-throat, it was applied to ulcers and swellings, and to dog, spider, and snake bites. When eaten it restored digestion and removed bladder-stones and liver ailments. It also made a poultice for wounds and head sores. Apuleius commended its root as a curative amulet, and said that whoever wore the plant was safe from snake bite."

Russell (1963) and Mound & Halsey (1977) list members of this genus as host to the whiteflies, Trialeurodes abutiloneus (Haldeman) Quaint. & Bak. and T. vaporariorum (Westwood) Quaint. & Bak. Pirone (1978) lists as attacking the genus Verbena [probably meaning mostly V. xhybrida] the following: bacterial wilt (Pseudomonas solanacearum), foxglove, green peach, and melon aphids, clematis blister-beetle (Epicauta cinerea), yellow woollybear (Diacrisia virginica), oblique-banded leaf-roller (Choristoneura rosaceana), garden webworm (Loxostege similaris), verbena leaf-miner (Agromyza artemisiae), verbena bud-moth (Endothenia hebesana), greenhouse whitefly (Trialeurodes vaporariorum), snapdragon lacebug, tarnished plant-bug, morning-glory leaf-cutter, greenhouse orthezia, cottony-cushion scale, flower thrip and greenhouse thrip, broad mite, cyclamen mite, two-spotted mite, fern nematode (Aphelenchoides olesistus), and northern root-knot nematode (Meloidogyne hapla).

The LeDoux & Dunn 1909, distributed as Verbena sp., actually is Priva grandiflora (Ort.) Moldenke.

Additional taxa excluded from the genus are

Verbena foemina Gerard = Sisymbrium officinale L., Brassicaceae

Verbena recta Gerard = Sisymbrium officinale L., Brassicaceae

Verbena supina mas Dod. = Veronica chamaedrys L., Scrophulariaceae

VERBENA ABRAMSI Moldenke

Additional bibliography: Moldenke, Phytologia 36: 123. 1977.

Recent collectors have encountered this species in a "rocky and grassy road-edge in oak woodland mixed with grass and shale surface-rock", at 2100 feet altitude, flowering and fruiting in June. They have misidentified it as V. officinalis L.

Additional citations: CALIFORNIA: Mariposa Co.: Cox, Dunn, & Harmon 391 (N).

VERBENA ALATA Sweet

Additional bibliography: Sweet, Hort. Brit., ed. 3, 553. 1839; Moldenke, Phytologia 36: 123, 236, & 242. 1977.

Hatschbach refers to this plant as a shrub, 1.5 m. tall, with "lilac" corollas, and found it growing in brejo (sedge meadow), flowering and fruiting in October and November. The corollas on Lindeman & Haas 5062 are said to have been "purple" when fresh.

Louson (1832) states that V. alata was cultivated in British gardens in his day, having been introduced in 1827 from Montevideo.

Additional citations: BRAZIL: Paraná: Hatschbach 39155 (Ld, N), 40473 (Ld); Lindeman & Haas 5062 (Ld).

VERBENA xALLENI Moldenke

Additional bibliography: Moldenke, Biol. Abstr. 63: 1851. 1977; Moldenke, Phytologia 36: 123—124, 217, 244, & 464. 1977.

The specimen cited below was originally identified and distributed as V. scabra Vahl; the collector notes "plants 2—3 feet tall, branches grotesquely sprawling, flowers blue, opening at base of branch first and alternately blooming to the tip". It was collected in flower in August, and apparently no seed had set.

Additional citations: TEXAS: Hardin Co.: G. Watson H.9 (Ld).

VERBENA AMBROSIFOLIA Rydb.

Additional bibliography: McGregor & al., Fl. Great Plains 280, map 1118. 1977; Moldenke, Phytologia 36: 124—125, 135, 141, 142, 148, 157, & 463. 1977; A. L. Moldenke, Phytologia 39: 184. 1978.

Recent collectors have encountered this species growing in association with Bouteloua and Yucca and in fields with Artemisia association vegetation. The corollas are said to have been "purple" when fresh on Semple 420.

The Taylor & Taylor 5978, distributed as V. ambrosifolia, actually is V. bipinnatifida Nutt., while Norris 17719 is V. bracteata Lag. & Rodr.

Additional citations: COLORADO: El Paso Co.: Cox & Dunn 1365 (N). TEXAS: Brewster Co.: Semple 420 (Ld). NEW MEXICO: Bernalillo Co.: Saufferer 175 (N).

VERBENA ARISTIGERA S. Moore

Additional bibliography: Moldenke, Phytologia 36: 125—126,

231, & 455. 1977.
Additional citations: PARAGUAY: V. Maruñak 126 (Ld).

VERBENA BARBATA Grah.
Additional bibliography: Sweet, Hort . Brit., ed. 3, 553. 1839; Moldenke, Phytologia 36: 127. 1977.
Loudon (1832) avers that this species was introduced into cultivation in Great Britain from Mexico in 1827.

VERBENA BERTERII (Meisn.) Schau.
Additional bibliography: Moldenke, Phytologia 36: 127, 151, & 231. 1977; A. R. Moldenke in Thrower & Bradbury, Chile-Calif. Medit. Scrub Atlas 211. 1977.

VERBENA BIPINNATIFIDA Nutt.
Additional bibliography: Sharma, Bull. Bot. Soc. Bengal 29: 143. 1975; McGregor & al., Fl. Great Plains 280, map 1119. 1977; Moldenke, Biol. Abstr. 64: 6574. 1977; Moldenke, Phytologia 36: 127--129, 141, 147, 231, 288, & 456. 1977; W. J. Park, Park Seeds Fls. Veg. 1978: 90. 1977.
Additional illustrations: W. J. Park, Park Seeds Fls. Veg. 1978: 90 [in color]. 1977.
Recent collectors have encountered this species "in loose soil on open relatively flat summits", "in large compact clumps with secondary rooting at the stem-bases", in open creosote-bush country, "abundant in rocky clay soil in full sunlight", "in hard-packed limestone soil with juniper, cholla, Gutierrezia, Mentzelia, and Salsola", "in open sandy areas with some post oak and yaupon", "in areas of gypsum hills and flats", on mesa bluffs, and in "coarse well-drained soil in area of mountainous ridges with oak-pine major vegetation", at 4500--7700 feet altitude, flowering in April and October, fruiting in October. The corollas are said to have been "purple and showy" on Gentry & Arquellas 22955, "purple" on Kelley 2, and "blue-violet" on Novosad 1125. Bennett and his associates found it growing in arid scrub with tree yuccas, flowering and fruiting in July. They misidentified it as V. ciliata Benth. Other collections of V. bipinnatifida have been misidentified and distributed as V. ambrosifolia Rydb. and V. canadensis (L.) Britton. On the other hand, the Warnock 4600, distributed as V. bipinnatifida, actually is V. bracteata Lag. & Rodr., while Gee 6 and Harvey 5 are V. canadensis (L.) Britton and Norris 17654 as V. ciliata Benth. It should be noted that Beaman thinks that Barkley, Webster, & Rowell 7659 is V. ciliata, but on re-examination I still feel that it is V. bipinnatifida.
Additional citations: KANSAS: Barber Co.: Barrell 18-71 (W--2802777), 31-71 (W--2802778). OKLAHOMA: Bryan Co.: Taylor & Taylor 12927 (Ld). Choctaw Co.: Taylor & Taylor 15952 (Ld). Harmon Co.: Taylor & Taylor 10200 (Ac, Ld), 20668 (Ld). Major Co.: Tay-

lor & Taylor 15911 (N). TEXAS: Bexar Co.: Novosad 1125 (Mu). Ellis Co.: Shepherd 83 (Mi). Grayson Co.: Semple 567 (Ld). Mc Clennan Co.: S. Kelley 2 (Mu). Taylor Co.: Semple & Love 466 (Ld). NEW MEXICO: Socorro Co.: Barrell & Spongberg 158-66 (W—2809833); Edwards & Repass 4754 (N). MEXICO: Chihuahua: Gentry & Arguelles 22955 (W—2811206). Nuevo León: Bennett, Torke, Wieder, & Dunn 647 (N). Zacatecas: Taylor & Taylor 5978 (N).

xVERBENA BLANCHARDI Moldenke

Additional bibliography: Mohlenbrock, Guide Vasc. Fl. Ill. 366. 1975: Moldenke, Phytologia 36: 129. 1977; Mohlenbrock & Ladd, Distrib. Ill. Vasc. Pl. [247] & 276. 1978.

VERBENA BONARIENSIS L.

Additional bibliography: Sweet, Hort. Brit., ed. 1, 1: 325 (1826) and ed. 3, 553. 1839; García Barriga, Fl. Med. Colomb. 2: 514. 1975; Gunawardena, Gen. Sp. Pl. Zeyl. 147. 1968; S. R. Hill, Sida 6: 325. 1976; López-Palacios, Fl. Venez. Verb, 563 & 653. 1977; Moldenke, Biol. Abstr. 64: 6574. 1977; Moldenke, Phytologia 36: 129—132, 137, 226, 229, 236, & 455. 1977; K. E. Rogers, Sida 7: 78. 1977; Speta, Candollea 32: 142, 145, & 155, fig. 2 v & w. 1977.

Additional illustrations: Speta, Candollea 32: 142, fig. 2, v & w. 1977.

Recent collectors describe this plant as erect, 2 meters tall, and have encountered it in disturbed areas, at 2700 meters altitude, flowering in April. Speta (1977) reports that "In den Kernen der Korollenepidermis befinden sich 1—2 relativ dicke plattenförmige Kristalle".

Loudon (1832), calling it the "cluster-flower'd vervain", avers that it was introduced into cultivation in England from Buenos Aires in 1732. Rogers (1977) reports the species from Forrest and Perry Counties, Mississippi; Hill found it growing "in disturbed ground along farm road" and asserts that "This collection represents a genus new to the Bahamas". López-Palacios, in a personal communication to me, states that in both Colombia and Ecuador this species is known by the vernacular name, "verbena". Walker (1976) records the name, "tachi-ba-bena" [=erect leaf], from Okinawa. He cites Amano 7373, Hatusima 17571, and Walker 8133 from that island.

The Univ. Calif. Bot. Gard. Access. 63.740-S3, distributed as typical V. bonariensis, actually represents var. conglomerata Briq., while D. S. Correll 36837 and D'Arcy 1590 are V. brasiliensis Vell. and Bayliss BS.7344 is V. tenuisecta Briq.

Additional citations: LOUISIANA: Bienville Par.: Thieret 29749 (Ld). TEXAS: Sabine Co.: Correll & Correll 38761 (Ld, Ld, Ld). JAMAICA: Crosby, Hespenheide, & Anderson 231 (Ld); Proctor 23518 (Ld). ECUADOR: Pichincha: Humbles 6152 (W—2788938). ARGENTINA:

Buenos Aires: Ruiz Huidobro 1695 (Au--121760). Mendoza: Paci 794 (Au--121759). NEW ZEALAND: North Island: Philson, Doore, & Nash 234 (Au--289869). MOUNTED CLIPPINGS: Walker, Fl. Okin. & South. Ryuk. 884. 1976 (W, Z).

VERBENA BONARIENSIS var. CONGLOMERATA Briq.

Additional bibliography: Moldenke, Phytologia 36: 132. 1977.

The University of California specimen, cited below, was grown there from seed secured in the Canary Islands. Its leaves are very narrow and stiff. Hatschbach describes the plant as a shrub, 1 meter tall, with "violet" corollas, and found it growing in brejo (wet sedge meadow), flowering in March.

Additional citations: BRAZIL: Rio Grande do Sul: Hatschbach 41138 (Ld). CULTIVATED: California: Univ. Calif. Bot. Gard. Access. 63.740.S3 (N, N, N, N).

VERBENA BRACTEATA Lag. & Rodr.

Additional synonymy: Verbena bracteata Cave Lag. & Rodr., in herb.

Additional bibliography: Sweet, Hort. Brit., ed. 1, 1: 325 (1826) and ed. 3, 553. 1839; Mohlenbrock, Guide Vasc. Fl. Ill. 366. 1975; McGregor & al., Fl. Great Plains 280, map 1120. 1977; Moldenke, Biol. Abst. 64: 6574. 1977; Moldenke, Phytologia 36: 124, 133—136, 150, 219, 232, 295, 299, 300, 304—307, & 452. 1977; Brink & Mayer, Phytologia 38: 494. 1978; Mohlenbrock & Ladd, Distrib. Ill. Vasc. Pl. [246] & 276. 1978.

Recent collectors have found this species in douglas-fir and oak forests, in dry soil, among sagebrush on sandy slopes, "in riparian community in bog to sandy soil", "with Agropyron smithii and Elymus canadensis in red 'Flowerpot' soil on lower, gentle, south-facing slopes", "abundant on gravel flats", and "common in saline areas", at altitudes of 4160--7000 feet, flowering and fruiting from July to September. Mohlenbrock (1975) asserts that in Illinois the species is "occasional to common throughout the state", implying that it occurs in every county.

The corollas are said to have been "blue" on Taylor & Taylor 16319b, "lavender" on Taylor & Taylor 16127, "blue-violet" on Holmgren & Reveal 1023, "purple" on Crutchfield 1875 and Hutchins 430, "light-purple" on Duncan 12696, and "purple with white center" on Semple & Love 297.

Material of this species has been misidentified and distributed in some herbaria as V. ambrosiaefolia Rydb. On the other hand, the J. Jermy 65, distributed as V. bracteata, actually is V. pumila Rydb.

In Texas recent collectors have encountered V. bracteata in "sandy to loamy soil in Ptelea-Rhus-Prosopis communities" and "in clayey limestone to sandy soils in Rhus-Prosopis-Celtis communities".

Loudon (1832) states that it was introduced into cultivation in England from North America in 1812.

Additional citations: GEORGIA: Clarke Co.: Duncan 12696 (Au—295777). ILLINOIS: Peoria Co.: V. H. Chase 9707 (Au--121831). Woodford Co.: Thom A.54 (Ld). KENTUCKY: Jefferson Co.: Gunn J.189 (Ld). WISCONSIN: Walworth Co.: Wadmond s.n. [June 18, 1934] (Au--121833). KANSAS: Barber Co.: Barrell 57-74 (W--2802776). Douglas Co.: Horr E.570 (Au—121822, Ld). Kearny Co.: T. C. Browne s.n. [Aug. 1949] (Au--121834). ARKANSAS: Pope Co.: G. M. Merrill s.n. (Au--121823). UTAH: Garfield Co.: Holmgren, Reveal, & LaFrance 2101 (Au--251433). Piute Co.: Higgins 10711 (N). Washington Co.: Gentry & Jensen 2255 (Au--276516). NEVADA: Churchill Co.: Williams & Lott 75-66-2 (N). Douglas Co.: Tiehm 3716 (N). Mineral Co.: Williams & Lott 77-76-6 (N). Pershing Co.: Tiehm & Mozingo 3890 (N). White Pine Co.: Holmgren & Reveal 1023 (Au--242165); Mozingo s.n. [July 12, 1974] (N). OKLAHOMA: Beaver Co.: Taylor & Taylor 16127 (Ld). Bryan Co.: Taylor & Taylor 16319b (Ld). Cimarron Co.: Taylor & Taylor 8246 (Ld). Lincoln Co.: Matlock 11 (Au—121821). Mayes Co.: Coryell 934 (Au--121832). TEXAS: Andrews Co.: Scudday s.n. [5-8-60] (Ld). Culberson Co.: Warnock 4600 (Au--121785). El Paso Co.: Powell & Powell 3000 (Ld). Floyd Co.: Purvis 21 (Au—249247). Garza Co.: Hutchins 430 (Ld). Jeff Davis Co.: Head 10 (Au--121788). Martin Co.: Semple & Love 297 (Ld). Potter Co.: Higgins 10220 (N). Randall Co.: Higgins 11376 (N). NEW MEXICO: Colfax Co.: Taylor & Taylor 8275 (Ld). County undetermined: Fendler 587 (Ld). ARIZONA: Coconino Co.: Correll & Correll 39468 (Ld, N); Crutchfield 1875 (Ld). WASHINGTON: Benton Co.: L. S. Rose 48153 (Au--121819). MEXICO: Nuevo León: Norris 17719 (N).

VERBENA BRASILIENSIS Vell.

Additional bibliography: Stalter, Castanea 40: 13. 1975; Lelong, Sida 7: 140. 1977; Moldenke, Biol. Abstr. 64: 6574. 1977; Moldenke, Phytologia 36: 131, 136—138, 154, 216, 221, 235, 236, & 277. 1977; K. E. Rogers, Sida 7: 78. 1977; Van der Werff, Bot. Notiser 130: 96. 1977.

Lelong (1977) reports this species as common in waste places and along roadsides in Mobile County, Alabama, while Rogers (1977) refers to it as "common in a variety of disturbed habitats. Introduced" in Forrest and Perry Counties, Mississippi. Stalter (1975) records it from the Isle of Palms, Charleston County, South Carolina. Other recent collectors have found it growing in ruderal conditions and in grassland along roadsides, describing it as erect and wiry-stemmed or even as a "shrub", 1 meter tall, with small flowers. The corollas are said to have been "lilac" in color when fresh on Hatschbach 40662 and "deep-mauve" on Bayliss BS.7937. Bayliss encountered it at 4000 feet altitude in South Africa.

The Artz & Krouse s.n. [27 Aug. 1971], distributed as V. brasiliensis, actually is V. hastata L., while Correll & Correll 36351 is V. hastata var. scabra Moldenke.

Additional citations: SOUTH CAROLINA: McCormick Co.: Ellison 817 (Ld). FLORIDA: Alachua Co.: D'Arcy 1590 (Ld). ALABAMA: Montgomery Co.: Hocking 1089 (Ld). MISSISSIPPI: Covington Co.: Ray 7225 (Ld). OKLAHOMA: McCurtain Co.: Taylor & Taylor 10716 (Ld). TEXAS: Jackson Co.: D. S. Correll 36837 (Ld). Jefferson Co.: Crockett 1101 (Ld), 6961 (Ld); Stutzenbaker 205 (Au--292033). Liberty Co.: D. S. Correll 36472 (Ld). Sabine Co.: D. S. Correll 37230 (Ld). CALIFORNIA: Stanislaus Co.: Howell 30107 (Au--272412). MEXICO: Michoacán: Feddema 23 (Au--263621). Nayarit: Feddema 583 (Au--263599). BRAZIL: Minas Gerais: Irwin 2116 (Au--172779). Paraná: Hatschbach 40662 (Ld). ARGENTINA: Córdoba: Krapovickas & Cristóbal 14692 (Ld). San Juan: Cuezzo 1744 (Au--121836). SOUTH AFRICA: Cape Province: Bayliss BS.7937 (W--2831499).

VERBENA CABRERAE Moldenke

Additional bibliography: Hocking, Excerpt. Bot. A.25: 379. 1975; Moldenke, Phytologia 36: 138. 1977.

Additional citations: BOLIVIA: Tarija: Krapovickas, Mroginski, & Fernández 19272 (Ld).

VERBENA CABRERAE var. ANGUSTILOBATA Moldenke

Additional bibliography: Hocking, Excerpt. Bot. A.25: 379. 1975; Moldenke, Phytologia 36: 138. 1977.

VERBENA CALLIANTHA Briq.

Additional bibliography: Moldenke, Phytologia 36: 138—139. 1977.

Additional citations: BRAZIL: Paraná: Hatschbach 25509 (N). ARGENTINA: Formosa: Krapovickas 13085 (Ld). Misiones: Krapovickas, Cristóbal, & Maruñak 15492 (Ld).

VERBENA CAMERONENSIS L. I. Davis

Additional bibliography: Moldenke, Phytologia 36: 139. 1977.

Recent collectors have found this plant in flower in March and December and in fruit in March. The corollas are described as having been "blue" on Richardson 1090.

Additional citations: MEXICO: Tamaulipas: Richardson 1090 (Ld), 1125 (Ld). MOUNTED CLIPPINGS: Original description by Davis (W).

VERBENA CANADENSIS (L.) Britton

Additional synonymy: Verbena lamberti β rosea Loud., Hort. Brit., ed. 2, 553. 1832. Verbena drummondi Hook. ex Loud., Hort. Brit., ed. 2, 553. 1832. Verbena aubletia β drummondi Loud., Hort. Brit., ed. 2, 553. 1832. Verbena lamberti β rosea D. Don in Sweet, Hort.

Brit., ed. 3, 553. 1839.

Additional bibliography: Sweet, Hort. Brit., ed. 1, 1: 325 (1826) and ed. 3, 553. 1839; Hartmann & Kester, Pl. Prop., ed. 3, 646. 1975; Mohlenbrock, Guide Vasc. Fl. Ill. 365 & 366. 1975; Mc Gregor & al., Fl. Great Plains 281, map 1121. 1977; Moldenke, Biol. Abstr. 64: 6574. 1977; Moldenke, Phytologia 36: 125, 128, 135, 139—142, 221, & 454. 1977; K. E. Rogers, Sida 7: 78. 1977; Speta, Candollea 32: 142, 146, & 155, fig. 2 t & u. 1977; R. L. Thompson, Castanea 42: 88. 1977; Thompson & Heineke, Trans. Ill. Acad. Sci. 70: 126. 1977; Mohlenbrock & Ladd, Distrib. Ill. Vasc. Pl. [246] & 276. 1978.

Additional illustrations: Speta, Candollea 32: 142, fig. 2 t & u. 1977.

Sweet (1839) calls V. aubletia the "rose vervain" and says that it was introduced from North American and cultivated in British gardens in his day; V. lamberti he calls "Lambert's vervain", introduced from "Peru" in 1816 and V. lamberti β rosea, the "rose-flowered vervain", introduced from Louisiana in 1836. I am convinced that more intensive study of what is now passing as V. canadensis will show that several infraspecific taxa can be and are well worth being segregated.

Speta (1977) reports that "Die 4-zelligen Köpfchen der Haare, die Korollenepidermis und die Korollenhaare enthalten in ihren Zellkernen Stapel quadratischer, locker angeordneter Plättchen mit oftmals sehr grosser Seitenlänge. In kleineren Kernen befinden sich kompakte Stapel."

Tamm (1954) reports that V. canadensis is susceptible to infection by crown-gall, Agrobacterium tumefaciens.

Recent collectors report V. canadensis "relatively abundant in full sun, sandy soil in high grass", "abundant in full sun, sandy soil in association with grasses and dewberry vines", in woodlands, and "very infrequent but conspicuous in moist rich loam of dry, rocky, blackjack oak woods". Rogers (1977) reports it as "Infrequent in dryish woods. Native" in Forrest and Perry Counties, Mississippi, while Thompson (1977) refers to it as "rare" in Newton County, Arkansas. Hartmann & Kester (1975) call it the "clump verbena". Mohlenbrock (1975) asserts that the species occurs in "Rocky woods, edge of fields and prairies; occasional in the s. two-thirds of the state [of Illinois], rare or absent elsewhere." Thompson & Heineke (1977) record the species from Jackson County, Illinois.

The corollas are said to have been "purple" on Gee 6, "lavender-pink" on Correll & Lundell 18791, "bright purple-pink" on Ward 7487, and "blue" on Parham 24.

The Taylor & Taylor 15911 & 20668, distributed as V. canadensis, actually are V. bipinnatifida Nutt.

Additional citations: OKLAHOMA: Atoka Co.: M. Parham 24 (Ld). Choctaw Co.: Taylor & Taylor 17163 (Ld). Muskogee Co.: Taylor &

Taylor 10243 (Ld). Osage Co.: Ward 7487 (N). TEXAS: Bowie Co.: J. Taylor 18300 (Ld). Burleson Co.: Cee 6 (Mu); B. Harvey 5 (Mu). Marion Co.: Correll & Lundell 18791 (N).

VERBENA CANADENSIS f. CANDIDISSIMA (Haage & Schmidt) Palmer & Steyerm.

Additional bibliography: Coult., Contrib. U. S. Nat. Herb. 2: 328. 1892; Moldenke, Phytologia 23: 219. 1972.

VERBENA CANESCENS H.B.K.

Additional synonymy: Verbena scorpioides L., in herb.

Additional bibliography: Sweet, Hort. Brit., ed. 1, 1: 325 (1826) and ed. 3, 553. 1839; Moldenke, Biol. Abstr. 64: 6574. 1977; Moldenke, Phytologia 36: 135, 142--144, & 464. 1977.

Sweet (1826) asserts that this species was introduced into cultivation in British gardens from Mexico in 1820.

Pichon encountered the species "in arid to semiarid habitat on west-facing hillsides with shrubs and small woody plants" and avers that it is "found from southern Texas to San Luis Potosí", Mexico.

The Mears & Mears 2501, Parker 366, and Smith & Butterwick 157, distributed as V. canescens, actually represent var. roemeriana (Scheele) Perry, while Lundell & Lundell 9796 and R. Runyon 2559 are mixtures with that variety.

Additional citations: TEXAS: Cameron Co.: R. Runyon 4870 (Au--290474). Goliad Co.: S. R. Hill 4619 (N). Starr Co.: Crockett 289a (Ld); Lundell & Lundell 9796 in part (Ld), 9930 (Ld); R. Runyon 2559 in part (Au--290500. MEXICO: México: Cruz Cisneros 959 (Ld). Nuevo León: Pichon 177 (Au--297425). San Luis Potosí: J. Rzedowski 24811 (Ld).

VERBENA CANESCENS var. ROEMERIANA (Scheele) Perry

Additional bibliography: Moldenke, Phytologia 36: 143--144. 1977.

Recent collectors have found this plant on limestone ledges and in roadside ditches, growing in association with Phacelia, Aphanostephus, Allium, Bouteloua rigidiseta, Diospyros texana, Opuntia lindheimeri, and Juniperus ashei, describing it as an annual or perennial, 25--30 cm. tall, "with many branches above the base". Smith refers to it as "common" in Bandera County, Texas, while Smith & Butterwick found it "infrequent" in Val Verde County. Runyon refers to it as "frequent in open clay soil" in Cameron County.

The corollas are said to have been "purple" on Lundell & Lundell 10023 and J. Smith 464, "pinkish-purple" on Lundell & Lundell 9819, "blue" on Runyon 6067, and "lavender" on Smith & Butterwick 157.

Lundell & Lundell 9796 and R. Runyon 2559 appear to be mixtures with typical V. canescens H.B.K., but R. Runyon 4283, dis-

tributed as var. roemeriana, actually is V. plicata Greene.

Additional citations: TEXAS: Bandera Co.: J. Smith 464 (Ld). Cameron Co.: Lundell & Lundell 10023 (Ld); R. Runyon 1532 (Au--290491), 6067 (N). Hidalgo Co.: Lundell & Lundell 9819 (Ld). Travis Co.: York 49002 (Au--121927). Val Verde Co.: Mears & Mears 2501 (Au--296930); Smith & Butterwick 157 (Ld). MEXICO: Nuevo León: Crockett 6466 (Ld); Parker 366 (Ld).

VERBENA CANIUENSIS Moldenke

Additional bibliography: Moldenke, Phytologia 28: 348. 1974.

Additional citations: BRAZIL: Paraná: Hatschbach 20177 (Ld).

VERBENA CAROLINA L.

Additional bibliography: Sweet, Hort. Brit., ed. 1, 1: 325 (1826) and ed. 3, 553. 1839; Moldenke, Biol. Abstr. 64: 6574. 1977; Moldenke, Phytologia 36: 144--145, 151, 152, 236, 238, 297, & 300. 1977.

Sweet (1826) and Loudon (1832), calling this the "Carolina vervain" and the "many-spiked vervain", assert that it was in cultivation in British gardens in their day, introduced from Mexico in 1820 and from "North America" in 1732.

Recent collectors have encountered the species "in valley between farms of corn and Agave among shrubs and many Lupinus marshalliamus" and in "volcanic and very thin soil in oak and sparse pine forests", at 8300--8500 feet altitude, flowering and fruiting in July. The corollas are said to have been "purple" on Martínez Calderón 1765.

The G. L. Fisher s.n. [Jacala, Aug. 12, 1937], distributed as V. carolina, actually is V. ehrenbergiana var. richardsonii Moldenke, while Breedlove 10457 is V. menthaefolia Benth.

Additional citations: MEXICO: Chiapas: Breedlove 10519 (Ld), 10856 (Ld), 11159 (Ld), 12324 (Ld). Durango: LeDoux & Dunn 1926 (Ld). Federal District: Barkley, Rowell, & Webster 2199 (Au--170145). México: Wieder, Dunn, Bennett, & Torke 99 (N). Oaxaca: Conzatti, Rowell, & Barkley 17M410 (Au--170073); R. M. King 2028 (Au--263303). Veracruz: Martínez-Calderón 1765 (Mi); Rosas R. 253 (Ld). GUATEMALA: Quezaltenango: Breedlove 11452 (Ld).

VERBENA CILIATA Benth.

Additional bibliography: Hanson, Univ. Nebr. Stud. 24: 24. 1924; McGregor & al., Fl. Great Plains 568. 1977; Moldenke, Biol. Abstr. 64: 6574. 1977; Moldenke, Phytologia 36: 124, 125, 146--148, & 156. 1977; A. L. Moldenke, Phytologia 39: 184. 1978.

Hanson (1924) encountered this plant "in woodland climax (Pinus-Juniperus) association with Salsola tragus and Psilostrophe tagetinae the first invaders on abandoned roads or other disturbed areas" in northeastern Arizona. Other recent collec-

tors have found it "in cultivated valley, thorn climax of tree mesquite" association, on greasewood deserts, and in ponderosa pine forests, at 7000 feet altitude, flowering and fruiting in August and September. The corollas are said to have been "light-blue" on Norris 16960 and "purple" on Norris 17654.

McGregor (1977) records this species in its typical form from Baca County, Colorado, Curry, Harding, Quay, and Union Counties, New Mexico, and Bailey and Dallam Counties, Texas.

Material of this species has been misidentified and distributed in many herbaria as V. bipinnatifida Nutt. On the other hand, the Cox & Dunn 1365, distributed as V. ciliata, actually is V. ambrosifolia Rydb., while Bennett, Torke, Wieder, & Dunn 647 is V. bipinnatifida Nutt., Gustafson s.n. [Jan. 8, 1932] is V. xhybrida Voss, and Dechamps 4012 and Webster 4466 are V. wrightii A. Gray. The Barkley, Webster, & Rowell 7659, considered to be V. ciliata by Beaman, actually is V. bipinnatifida Nutt.

Additional citations: MEXICO: Hidalgo: Norris 16960 (N). Nuevo León: Norris 17654 (N). Zacatecas: Dunn, Bennett, Wieder, & Torke 22577 (Au, N).

VERBENA CLOVERAE Moldenke

Additional bibliography: Moldenke, Phytologia 36: 149. 1977.

The corollas are said to have been "lilac" on Lundell & Lundell 15052, "purplish" on Lundell & Lundell 10112, and "purple" on Lundell & Lundell 9795, 9886, & 10072.

Additional citations: TEXAS: Bexar Co.: Crockett 248 (Ld). Brooks Co.: Lundell & Lundell 10072 (Ld). LaSalle Co.: Alvarez, Guajardo, Salazar, & McCart 7614 (Ld). San Saba Co.: Seigler 1483 (Au—285682). Starr Co.: Lundell & Lundell 9795 (Ld), 9886 (Ld); R. Runyon 2611 (Au—290494). Webb Co.: Crockett 6447 (Ld); Gentry & Barclay 18439 (Ld). Zapata Co.: Lundell & Lundell 10112 (Ld), 15052 (Ld).

VERBENA COCCINEA Raf.

Additional bibliography: Moldenke, Phytologia 23: 193. 1972.

The Prince Paul of Würtemberg 335, distributed as V. coccinea, actually is Stachytarpheta mutabilis (Jacq.) Vahl.

VERBENA CORYMBOSA Ruíz & Pav.

Additional bibliography: Moldenke, Phytologia 36: 149. 1977; Markgraf & D'Antoni, Pollen Fl. Argent. 99. 1978.

VERBENA CRITHMIFOLIA Gill. & Hook.

Additional bibliography: Moldenke, Phytologia 36: 149. 1977.

The O'Donell & Meyer 5220, distributed as this species, actually represents a rather broad-leaved form of V. hookeriana (Covas & Schnack) Moldenke.

Additional citations: ARGENTINA: Mendoza: Barkley 19Ar803 (Au—122054).

VERBENA CUMINGII Moldenke
Additional bibliography: Moldenke, Phytologia 36: 150. 1977.
Additional citations: CHILE: Coquimbo: Zöllner 7872 (W—2787331).

VERBENA xDEAMII Moldenke
Additional bibliography: Mohlenbrock, Guide Vasc. Fl. Ill. 366. 1975; Moldenke, Phytologia 36: 135, 150, 228, 305, & 306. 1977; Mohlenbrock & Ladd, Distrib. Ill. Vasc. Pl. [247] & 276. 1978.

VERBENA DELTICOLA Small
Additional bibliography: Moldenke, Phytologia 36: 150. 1977.
Recent collectors report the flowers of this species as fragrant and have found it growing in juniper and oak forests and "on wooded calcareous slopes in association with Quercus, Juniperus, and Pinus cembroides", flowering in September. The corollas are said to have been "purple" on Norris 17303 and "pink-lavender with a paler eye" on Lundell 10758.
Material has been misidentified and distributed in some herbaria as V. wrightii A. Gray.
Additional citations: TEXAS: Cameron Co.: C. L. Lundell 10758 (N). MEXICO: Coahuila: Riskind, Henrickson, Wendt, Chiang, & Johnston 11858 (Ld). Hidalgo: Norris 17303 (N).

VERBENA DEMISSA Moldenke
Additional bibliography: Moldenke, Biol. Abstr. 64: 4787. 1977; Moldenke, Phytologia 36: 151. 1977.
Additional citations: ECUADOR: Azuay: Asplund 17801 (Ld).

VERBENA DISSECTA Willd.
Additional bibliography: López-Palacios, Fl. Venez. Verb. 575 & 653. 1977; Moldenke, Phytologia 36: 151. 1977.
Recent collectors describe this plant as growing to 50 cm. tall and have found it in flower in October. The corollas are said to have been "purple" on Legname & Cuezzo 10426c.
The Vasconcelos Neto 3241, distributed as V. dissecta, actually is V. rigida Spreng.
Additional citations: ARGENTINA: Catamarca: Brizuela 375 (Au—122075, 754 (Au—289527. Salta: Legname & Cuezzo 10426c (Au). Santiago del Estero: Cuezzo 2404 (Au—122072); Ruiz-Huidobro 3108 (Au—122074). Tucumán: Terrible 338 (Au—289529).

VERBENA DOMINGENSIS Urb.
Additional bibliography: Moldenke, Phytologia 36: 151—152 &

277. 1977.

Additional citations: CUBA: Matanzas: Rugel 121 (Ld). HISPANIOLA: Dominican Republic: Ekman H.13581 (Ld). Haiti: Ekman H. 1569 (Ld).

VERBENA EHRENBERGIANA Schau.

Additional bibliography: Moldenke, Phytologia 36: 145, 152, & 277 (1977) and 38: 499. 1978; Moldenke, Biol. Abstr. 66: 1277. 1978.

Hernández and his associates refer to this plant as a "regular" annual herb 50 cm. tall, with "green" fruit, and encountered it in "selva mediana subperennifolia, secundaria, suelo arcilloso arenoso, associación cafetal in zona cafetalera", at 140 meters altitude.

The G. L. Fisher s.n. [Jacala, Aug. 12, 1947], previously cited by me as typical V. ehrenbergiana, actually represents var. richardsonii Moldenke

Additional & emended citations: MEXICO: México: C. A. Ehrenberg 713 [Macbride photos 17414] (Z--photo of type). Veracruz: Hernández A. & al. 154 (N).

VERBENA EHRENBERGIANA var. RICHARDSONII Moldenke, Phytologia 38: 499. 1978.

Bibliography: Moldenke, Biol. Abstr. 66: 1277. 1978; Moldenke, Phytologia 38: 499. 1978.

Collectors have found this plant in flower and fruit in May, June, and December. The Fisher collection, cited below, was previously erroneously cited by me as typical V. ehrenbergiana Schau.

Citations: MEXICO: Hidalgo: G. L. Fisher s.n. [Jacala, Aug. 12, 1937] (N). Tamaulipas: Richardson 216 (Ld), 293 (Ld), 1116 (Ld), 1234 (Ld--type, Ld--isotype, Ld--isotype).

VERBENA ELEGANS H.B.K.

Additional bibliography: Moldenke, Phytologia 36: 141, 142, 152--153, & 455. 1977.

Sanders reports this species found as "scattered clones in mesic oak-hickory woods on limestone outcrops in red-brown loamy clay soil" and describes it as having procumbent stems, to 1 m. long, rooting at the nodes, the tips ascending, flowering in May. The corollas are said to have been "pink-purple on Sanders 74028.

Additional citations: MEXICO: Hidalgo: Pringle 6908 (Ld). Querétaro: Turner 76-15 (Ld). San Luis Potosí: Sanders 74028 (Mi).

VERBENA ELEGANS var. ASPERATA Perry

Additional bibliography: Moldenke, Phytologia 36: 153. 1977; O. Stern, Stern's Nurs. Guide Mir. Gard. 18. 1977.

Illustrations: O. Stern, Stern's Nurs. Guide Mir. Gard. 18 [in color]. 1977.

This may very well be the recently introduced verbena referred by me in a previous installment of these notes under V. peruviana f. rosea Moldenke. Its trade name is "Pink Princess" Trailing Verbena and it is offered by Stern's Nursery, Geneva, New York at $2.25 per 2-inch plant, 100 for $82.50. It is best adapted to hanging baskets, but must be watered daily (in very hot climates twice daily) and will then bloom from spring to fall. Frequent pinching back of the stems and added feeding every two weeks will enable it to be kept indoors over winter "to save for another year's cascade of blooms".

Additional citations: CULTIVATED: New Jersey: Moldenke & Moldenke 31430 (Ld).

VERBENA xENGELMANNII Moldenke

Additional bibliography: Mohlenbrock, Guide Vasc. Fl. Ill. 367. 1975; Moldenke, Phytologia 36: 153—154 & 221. 1977; Mohlenbrock & Ladd, Distrib. Ill. Vasc. Pl. [247] & 276. 1978.

Additional citations: INDIANA: Fulton Co.: Friesner 23110 (Au—122108). MISSOURI: Saint Louis: Engelmann s.n. [St. Louis, Aug. 1843] (Au--122806).

VERBENA EPHEDROIDES Cham.

Additional synonymy: Verbena ephedroides var. ephedroides [Cham.] ex Troncoso, Darwiniana 21: 178. 1977.

Additional bibliography: Moldenke, Phytologia 36: 159. 1977; Troncoso & Bacigalupo, Darwiniana 21: 178. 1977.

VERBENA EPHEDROIDES var. ENTRERIENSIS Troncoso in Troncoso & Bacigalupo, Darwiniana 21: 178. 1977.

Bibliography: Troncoso & Bacigalupo, Darwiniana 21: 178. 1977; Troncoso & Bacigalupo, Biol. Abstr. 66: 3705. 1978.

This variety differs from the typical form of the species in having the leaves on its flowering branches shortly linear, 3—10 mm. long, the bracts 2--2.8 mm. long, surpassing the lower half of the calyx, the corolla-limb spreading, 4.5—6 mm. in diameter, the lobes 1.5—2 mm. wide, and the mericarps larger, 2—2.5 mm. long, 0.7—0.8 mm. wide.

The variety is based on A. Burkart 25405 from Río Feliciano, dept. La Paz, Entre Ríos, Argentina, deposited in the San Isidro herbarium. It is said to inhabit "an pajonales y bañados". The author cites also from Entre Ríos Lorentz 45 and s.n. [C. del Uruguay, prox. Ao. La China] and Nicora 6391 in the San Isidro, Córdoba, Buenos Aires, and Washington herbaria.

VERBENA FASCICULATA Benth.

Additional bibliography: Moldenke, Phytologia 36: 154. 1977.

Additional citations: PERU: Department undetermined: G. W. Barclay s.n. (W—2779832).

VERBENA FILICAULIS Schau.

Additional bibliography: Moldenke, Phytologia 36: 154 (1977) and 40: 261. 1978.

The following collections, previously cited by me as typical V. filicaulis, actually represent what is now known as var. pinnatisecta (Schau.) Moldenke: Dusén 15679, Hatschbach 2672, W. Hoehne 527, Löfgren s.n. [Pinheiros, Nov. 2, 1893; Herb. Com. Geogr. & Geol. 1560; Herb. Inst. Bot. S. Paulo 15713], and Sellow 20 [Macbride photos 17439], the last-mentioned being the type collection of the new variety.

Additional citations: BRAZIL: Paraná: Hatschbach 11756 (Ld). Santa Catarina: Smith & Reitz 12482 (Au--249873).

VERBENA FILICAULIS var. AUSTRALIS (Moldenke) Moldenke, Phytologia 40: 261. 1978.

Synonymy: Verbena australis Moldenke, Phytologia 2: 419--420. 1948.

Bibliography: Moldenke, Phytologia 2: 419--420. 1948; Moldenke, Castanea 13: 117. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 93 & 197. 1949; Moldenke, Alph. List Cit. 4: 1250. 1949; Stellfeld, Trib. Farmac. 19 (10): 166. 1951; E. J. Salisb., Ind. Kew. Suppl. 11: 262. 1953; Angely, Fl. Paran. 12: 17. 1958; Moldenke, Résumé 109 & 470. 1959; Angely, Fl. Paran. 16: 78 (1960) and 17: 46. 1961; Moldenke, Phytologia 8: 380 (1962) and 8: 461. 1963; Angely, Fl. Anal. Paran., ed. 1, 570. 1965; Moldenke, Fifth Summ. 1: 177 (1971) and 2: 912. 1971; Moldenke, Phytologia 22: 465 (1972), 23: 214 (1972), and 40: 261. 1978.

This variety differs chiefly from the typical form of the species in its distinctly pilose stems, the plant often not nigrescent in drying. Recent collectors have found it growing in wet places, flowering in November, describing it as a "subshrub". The corollas are said to have been "blue" on Braga & al. 328.

Citations: BRAZIL: Parana: Braga, Moreira, & Lange 328 (Ld, W--2369350, Z); Dusén 13190 (F--photo of type, N--isotype, N--photo of type, S--type, Si--photo of type, Z--photo of type).

VERBENA FILICAULIS var. PINNATISECTA (Schau.) Moldenke, Phytologia 40: 261. 1978.

Synonymy: Verbena pinnatisecta Schau. in A. DC., Prodr. 11: 549. 1847.

Bibliography: Schau. in A. DC., Prodr. 11: 549. 1847; Schau. in Mart., Fl. Bras. 9: 192. 1851; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 1179 (1895), imp. 2, 2: 1179 (1946), and imp. 3, 2: 1179. 1960; Moldenke, Phytologia 9: 119 & 120. 1963; Moldenke, Fifth Summ. 2: 690. 1971; Moldenke, Phytologia 40: 261. 1978.

This variety is based on Sellow 20, probably from Minas Gerais, and Riedel s.n. from wet swampy places at or near Mugy das Cruces, São Paulo, Brazil, deposited in the De Candolle Herbarium at Geneva. All the collections cited below were previously cited by me

under typical V. filicaulis before the present variety was recognized as a valid taxon characterized by its more husky habit throughout and larger leaves with their divisions noticeably wider.

Collectors have encountered this plant in brejo (sedge meadows), swampy fields, and river margins, at 800 meters altitude, flowering from September to December. The corollas are said to have been "violet" in color when fresh on Hatschbach 2672 and "lilac" on Hatschbach 40474.

Citations: BRAZIL: Minas Gerais: Sellow 20 [Macbride photos 17439] (Kr—photo of cotype, Kr—photo of cotype, N—photo of cotype, N—photo of cotype, W—photo of cotype, Z—photo of cotype). Paraná: Dusén 15679 (Ca—501671, Mu, N, S, S, W—1481764); Hatschbach 2672 (N), 40474 (Z). São Paulo: W. Hoehne 527 (N); Löfgren s.n. [Pinheiros, Nov. 2, 1893; Herb. Com. Geogr. & Geol. 1560] (N, Sp—15713).

VERBENA FLAVA Gill. & Hook.

Additional bibliography: Moldenke, Phytologia 36: 154. 1977.

Ammann encountered this plant at 700 meters altitude.

Additional citations: ARGENTINA: Neuquen: Ammann 113 (N).

VERBENA GALAPAGOSENSIS Moldenke

Additional bibliography: Moldenke, Phytologia 36: 154—155 & 458. 1977; Van der Werff, Bot. Notiser 130: 96—97. 1977.

Van der Werff (1977) maintains that this taxon is conspecific with V. townsendii Svenson, which he regards as a very variable species.

VERBENA GLABRATA H.B.K.

Additional bibliography: García Barriga, Fl. Med. Colomb. 2: 514. 1975; López-Palacios, Fl. Venez. Verb. 560, 569, & 653. 1977; Moldenke, Phytologia 36: 155, 235, & 458. 1977; Van der Werff, Bot. Notiser 130: 96—97. 1977.

López-Palacios, in a personal communication to me, reports that "El ejemplar Cecilia Torres 53 del herbario de Guayaquil tiene esta nota: 'Calma los cólicos estomacales; higado; contra las inflamaciones vaginales; como purgante."

Additional citations: ECUADOR: Pichincha: Asplund 17227 (Ld).

VERBENA GLABRATA var. TENUISPICATA Moldenke

Additional bibliography: Moldenke, Phytologia 36: 155 & 458. 1977; Van der Werff, Bot. Notiser 130: 96—97. 1977.

Van der Werff (1977) maintains that this taxon is conspecific with V. townsendii Svenson, which he regards as a very variable species.

VERBENA GOODDINGII Briq.

Additional bibliography: Moldenke, Biol. Abstr. 64: 6574. 1977; Moldenke, Phytologia 36: 124, 141, 147, 156—157, & 463 (1977) and 39: 161. 1978.

Recent collectors report this species as "an infrequent perennial in granitic sand on open flats with Coleogyne, Yucca baccata, Gutierrezia, Hymenoclea, Mirabilis, etc.", "frequent in sandy arroyos with Ephedra, Yucca schindigera, Y. baccata, Ferocactus, Haplopappus, etc.", "in sandy arroyos with Prunus fasciculata, Rhus trilobata, Ephedra, Yucca schidigera, Haplopappus, etc., infrequent", "infrequent perennial in gravelly limestone soil of wash with Prunus fasciculata, Cowania, Rhus trilobata, Brickellia multiflora, Asclepias asperula, Artemisia nova, etc.", "infrequent on rocky granitic north-facing slopes with Pinus monophylla, Yucca baccata, Juniperus, Salvia, Haplopappus, Opuntia, etc.", and "a common perennial with Pinus monophylla, Juniperus, Eriogonum, Agave, Haplopappus, Yucca, Ephedra, etc., as well as in gravelly soil, at 4000--5000 feet altitude, flowering from April to July, fruiting in May and July. The corollas are said to have been "light-blue" on Henrickson 4734, "blue" on Prigge 1530, "lavender, drying blue" on Henrickson 9219, "reddish-blue, drying blue" on Henrickson 10213, "pinkish, drying blue" on Henrickson 10114 and "purple" on Prigge & Henrickson 163.

Additional citations: CALIFORNIA: San Bernardino Co.: Henrickson 4734 (Ld), 9219 (Ld), 10114 (N), 10213 (N), 11157 (Ld); Prigge 1530 (N); Prigge & Henrickson 163 (Au); Thorne 43322 (Mi).

VERBENA GOODDINGII var. NEPETIFOLIA Tidestr.

Additional bibliography: Moldenke, Phytologia 36: 124, 147, & 156--157 (1977) and 39: 161. 1978.

Recent collector have found this plant growing in volcanic sand in Idria-Franseria association with volcanic rock, at 2400--3000 feet altitude, flowering and fruiting in April.

Additional citations: MEXICO: Baja California: Gentry & Cech 8997 (W--2810945). MOUNTED CLIPPINGS: Tidestrom's original description (W).

VERBENA GRACILESCENS (Cham.) Herter

Additional bibliography: DiFulvio, Kurtziana 10: 70 & 71, fig. 1g. 1977; Moldenke, Phytologia 36: 157--158. 1977; "J. W. S.", Biol. Abstr. 64: 5978. 1977.

Additional illustrations: DiFulvio, Kurtziana 10: 70, fig. 1g. 1977.

DiFulvio (1977) reports the chromosome number in this species as x = 7 and so concludes that Schnack's plant, earlier reported on in this series of notes, where x = 21, was a hexaploid.

Material of V. gracilescens has been misidentified and distributed in some herbaria as V. gracilis Cham. [=V. intermedia Gill. & Hook.], a totally dissimilar species.

Additional citations: ARGENTINA: San Luis: Varela 452 (Au—122121). Santa Fé: Ruiz Huidobro 3418 (Au--122120, Au--122122).

VERBENA HALEI Small

Additional bibliography: McGregor & al., Fl. Great Plains 568. 1977; Moldenke, Biol. Abstr. 63: 1851. 1977; Moldenke, Phytologia 36: 216—218, 236, 249, 277, 300, 303—306, & 464. 1977; K. E. Rogers, Sida 7: 78. 1977; Moldenke, Biol. Abstr. 65: 71. 1978.

Recent collectors refer to this species as "abundant in full sun, sandy clay soil", in "lay-loam of roadsides", "frequent in dry sandy soil associated with Chloris cucullata, Gutierrezia dracunculoides, and Verbesina encelioides", and "abundant at edge of pavement with bur-clover and Angallis arvensis". Rogers (1977) found it "Frequent along roads and trails. Native" in Forrest and Perry Counties, Mississippi. McGregor (1977) records it from Cotton County, Oklahoma.

The corollas are said to have been "lavender-purple" on Duncan 20214, "purple" on B. Miller 34, R. Miller 16, and Lundell & Lundell 10308 & 10398, "purple to blue or rarely light-pink" on Massey 545, "lavender" on D. S. Correll 37274, Correll & Correll 39002, Hutchins 453, and Lundell & Lundell 10139, "bluish-lavender" on Ellison & Ellison 1010, "blue" on Hutchins 1049, "purple-blue" on Thieret 36996, "pale blue-purple" on Runyon 4282,and "pink or lavender" on Lundell & Lundell 10344. Parks s.n. [December 29, 1946] exhibits leaves on one sterile stem very much like those seen on V. runyoni Moldenke; hybridity may be involved.

The Wieder, Dunn, Bennett, & Torke 99, distributed as V. halei, actually is V. carolina L., while H. M. Parker 647 is V. menthaefolia Benth., Wallace, LeDoux, & Dunn 197 is V. neomexicana var. hirtella Perry, Dunn, Torke, Bennett, & Wieder 22610 is V. pinetorum Moldenke, Fleetwood 9459 and R. Runyon 4872 are V. runyoni Moldenke, and Bennett, Torke, Wieder, & Dunn 612 is V. xutha Lehm.

Additional citations: SOUTH CAROLINA: Aiken Co.: Ellison & Ellison 1010 (Au—296225, Ld). GEORGIA: Sapelo Island: Duncan 20214 (Mi). LOUISIANA: Calcasieu Par.: Crockett 6763 (Ld). Lafayette Par.: Thieret 36996 (Ld). OKLAHOMA: Atoka Co.: J. Taylor 18533 (Ld). Bryan Co.: Taylor & Taylor 10900 (Ld). Love Co.: Taylor & Taylor 16262 (Ld). TEXAS: Atascosa Co.: C. E. Miller 51-481 (Au--122265). Bastrop Co.: Duval 214 (Au--291627); Lundell & Lundell 10344 (Ld). Bexar Co.: Burr 454 (Au--122247). Brazos Co.: Correll & Correll 39002 (Ld); Gould 5436 (Au--122266); Massey 545 (Ld); B. Miller 34 (Mu); R. Miller 16 (Mu); E. J. Palmer 11715 (Au—122267); Parks s.n. [4-6-46] (Au—122270), s.n. [December 29, 1946] (Au—122271). Cameron Co.: R. Runyon 4676 (Au—290518), 4720 (Au—290499), 4857 (Au—290529), 4873 (Au—290475), 4892 (Au—290495). Dallas Co.: Lundell & Lundell 10398 (Ld). Duval Co.:

Alvarez, Guajardo, Salazar, & McCart 7671 (Ld). Fannin Co.: D. S. Correll 37274 (Ld). Frio Co.: Lundell & Lundell 10139 (Ld). Galveston Co.: Crockett 8361 (Ld). Garza Co.: Hutchins 453 (Ld), 1049 (Ld). Guadalupe Co.: I. G. Patterson 118 (Ld). Hardin Co.: Crockett 1020 (Ld). Hidalgo Co.: Crockett 8005 (Ld). Jeff Davis Co.: Worthington 2787 (Ld). Jefferson Co.: Crockett 677 (Ld), 912 (Ld), 6923 (Ld), 6950 (Ld), 8413 (Ld). Karnes Co.: J. C. Johnson 822 (Au--122258). Kleberg Co.: R. Runyon 4282 (Au—290477). Llano Co.: Ohlenbusch 71 (Au—219548); Taylor & Taylor 13194 (Ld). Red River Co.: Taylor & Taylor 10689 (Ld). Travis Co.: Birge 2961 (Au—122202); Lundell & Lundell 10308 (Ld); York 49001 (Au—122196). Mustang Island: Gillespie 63 (Au—286070). MEXICO: Nuevo León: Roberts 57 (Au—297431).

VERBENA HASTATA L.

Additional synonymy: Verbena paniculata β pinnatifida (Lam.) Schau. in A. DC., Prodr. 11: 546. 1847. Verbena paniculata β pinnatifida Lam. ex Buek, Gen. Spec. Syn. Candoll. 3: 495. 1858.

Additional bibliography: Sweet, Hort. Brit., ed. 1, 1: 325 (1826), ed. 2, 418 & 419 (1830), and ed. 3, 553. 1838; Shosteck, Flow. & Pl. 278—279. 1974; Mohlenbrock, Guide Vasc. Fl. Ill. 366 & 367. 1975; Palmer & Fowler, Fieldb. Nat. Hist., ed. 2, 287 & 777. 1975; Burk, Journ. Appl. Ecol. 14: 517. 1977; Greller, Bull. Torrey Bot. Club 104: 176. 1977; Hehre, Rhodora 79: 237. 1977; Mc Gregor & al., Fl. Great Plains 281, map 1122. 1977; G. L. Mill., Bull. Torrey Bot. Club 104: 387. 1977; Moldenke, Phytologia 36: 218—224, 239, 282, 303, 307, 451, & 461. 1977; Noblick, Annot. List Herb. Spec. M. Mitch. Assoc. 179. 1977; Speta, Candollea 32: 145 & 155. 1977; J. Taylor, Cat. Vasc. Aquat. Wetl. Pl. Okla. [Herb. SE. Okla. St. Univ. Publ. 1:] 48, 70, & 74. 1977; Thompson & Heineke, Trans. Ill. Acad. Sci. 70: 126. 1977; Brink & Mayer, Phytologia 38: 494. 1978; Burke, Biol. Abstr. 65: 771. 1978; Frankel, Bull. Torrey Bot. Club 105: 154. 1978; Mohlenbrock & Ladd, Distrib. Ill. Vasc. Pl. [246] & 276. 1978; Moldenke, Biol. Abstr. 65: 71. 1978; A. L. Moldenke, Phytologia 39: 184. 1978.

Additional illustrations: Palmer & Fowler, Fieldb. Nat. Hist., ed. 2, 287. 1975.

Sweet (1826) calls V. hastata the "halberd-leaved vervain" and says that it was introduced into British gardens in 1710 from Canada; V. paniculata he calls the "panicled vervain" and avers that it wasn't introduced from North America until 1810. Hehre (1977) records it from Gardiner's Island, New York, citing Hehre 302. Barber refers to it as "infrequent on thickly overgrown edges of open sandy creek banks", at 1650 feet altitude, in Kansas. Swanson reports it "uncommon" in Houston County, Minnesota, where he found "several plants growing on an old stump in submerged community in 1--1.5 m. of water north of a forested island

bordered on all sides by the Phalaris and hardwood dominated island" with "Salix community dominating the ends, Ulmus, scattered Phalaris, and mixed shrubs"; a photograph of the habitat accompanies his no. 1288. In Wisconsin he found it growing 1.7 m. tall on a sand spit dominated by Salix interior; a photograph of this habitat accompanies his no. 1829.

Burke (1977) reports that Verbena hastata was among those species not found in the Arcadia Wildlife Sanctuary in Northampton, Massachusetts, after the oil spill there in 1971 although it had been there before that date. Frankel (1978) reports it again from Westchester County, New York. Noblick (1977) cites the following collections from Nantucket County, Massachusetts: Albertson s.n., Collector undetermined s.n., G. B. Gardner s.n. [July 22, 1909], and Shurrocks & Shurrocks s.n., all deposited in the Maria Mitchell Association herbarium. Mohlenbrock (1975) reports the species in Illinois from "Wet woods, wet prairies, wet waste ground, common; in every co[unty]". Thompson & Heineke (1977) report it from Jackson County, Illinois.

Material of V. hastata has been misidentified and distributed in some herbaria as "V. braziliensis Vell." On the other hand, the Higgins 11495, J. Taylor 23131, Taylor & Taylor 12289, and Taylor & Wright 23930, distributed as typical V. hastata, actually represent var. scabra Moldenke, while J. Taylor 23015 is V. urticifolia L. and J. Taylor 22823 is V. xutha Lehm.

Additional & emended citations: NEW JERSEY: Hunterdon Co.: Moldenke & Moldenke 31462 (Ld). Ocean Co.: Moldenke & Moldenke 31533 (Lc). County undetermined: Knieskern s.n. (Mi). PENNSYLVANIA: Tioga Co.: Moldenke & Moldenke 31139 (W--2777781). Union Co.: Moldenke & Moldenke 31150 (W--2777778). VIRGINIA: Clark Co.: Artz & Krouse s.n. [27 Aug. 1971] (N). ILLINOIS: Henderson Co.: Taylor & Taylor 12052 (Ld). WISCONSIN: Fond du Lac Co.: Taylor & Taylor 12072 (Ld). Isanti Co.: Chandonnet s.n. [22 juillet 1899] (Mi). LaCrosse Co.: Swanson 1829 (N). Vernon Co.: Ziegler 513 (Ld). MINNESOTA: Houston Co.: Swanson 1024 (N), 1288 (N), 2572 (Ld). Kansas: Barber Co.: Barrell 111-73 (W--2802775).

VERBENA HASTATA f. ROSEA Cheney

Additional bibliography: Mohlenbrock, Guide Vasc. Fl. Ill. 366. 1975; Moldenke, Phytologia 36: 223. 1977.

VERBENA HASTATA var. SCABRA Moldenke

Additional bibliography: Moldenke, Phytologia 36: 220, 221, 223–224, & 239. 1977; A. L. Moldenke, Phytologia 39: 184. 1978.

Higgins encountered this plant in Populus-Tamarix communities on sandhills, flowering and fruiting in September.

Material of this variety has been misidentified and distributed

in some herbaria as V. brasiliensis Vell., and, of course, as typical V. hastata L.

Additional citations: MINNESOTA: Yellow Medicine Co.: Taylor & Taylor 12289 (Ld). NEBRASKA: Chase Co.: Taylor & Taylor 9017 (Ld). UTAH: Utah Co.: Flowers s.n. [Utah Lake, Aug. 10, 1924] (Mi). OKLAHOMA: Choctaw Co.: Taylor & Wright 23930 (Ld). Marshall Co.: J. Taylor 23131 (Ld). Woodward Co.: Correll & Correll 36351 (Ld). TEXAS: Potter Co.: Higgins 11495 (N).

VERBENA HIRTA Spreng.

Additional bibliography: Hocking, Excerpt. Bot. A.28: 171. 1976; Moldenke, Phytologia 36: 224—226 & 308. 1977.

Hatschbach encountered this species on "campo sujo", flowering in February, the corollas said to have been "lilac" when fresh.

Additional citations: BRAZIL: Paraná: Hatschbach 41166 (Ld).

VERBENA HIRTA var. GRACILIS Dusén

Additional bibliography: Moldenke, Phytologia 36: 225—226 & 308. 1977.

Hatschbach has encountered this plant in brejo (sedge meadow), flowering in October.

Additional citations: BRAZIL: Paraná: Hatschbach 40449 (Ld).

VERBENA HISPIDA Ruíz & Pav.

Additional synonymy: Verbena hispidula R. & P., in herb.

Additional bibliography: Sweet, Hort. Brit., ed. 3, 553. 1839; Perez-Arbelaez, Pl. Util. Colomb., ed. 1, 441 (1947) and ed. 2, 745. 1956; García Barriga, Fl. Med. Colomb. 2: 511. 1975; Moldenke, Phytologia 36: 226 & 292 (1977) and 41: 132. 1978; Moldenke, Biol. Abstr. 65: 71. 1978.

Sweet (1839) calls this species the "hispid vervain" and states that it was introduced into British gardens from Peru in 1816.

VERBENA HOOKERIANA (Covas & Schnack) Moldenke

Additional synonymy: Verbena critnifolia O'Donell & Meyer, in herb.

Additional bibliography: Moldenke, Phytologia 36: 226—227. 1977.

Additional citations: ARGENTINA: Catamarca: Hessling & Barkley 19Ar619 (Au—122309, Au—122310); Lagname & Vervoorst 45 (Ld); O'Donell & Meyer 5220 (N).

VERBENA xHYBRIDA Voss

Additional bibliography: Haines, Bot. Bihar & Orissa, ed. 1, 4: 707 (1922) and ed. 2, 2: 742. 1961; Hartm. & Kester, Pl. Prop., ed. 3, 103 & 646. 1975; Palmer & Fowler, Fieldb. Nat. Hist., ed. 2, 286—287 & 777. 1975; Walls, Compl. Book Greenh. Gard. 278.

1975; Cleene & De Ley, Bot. Rev. 42: 452. 1976; El-Kifl, El-Dessouki, & El-Khouly, Zeit. Angew. Zool. 63: 1--18. 1976; Greenwood, Proc. Linn. Soc. N. S. Wales 101: 240. 1977; López-Palacios, Fl. Venez. Verb. 559—563 & 653, fig. 131. 1977; Moldenke, Phytologia 36: 227--228, 277, 283, & 286. 1977; Nagy & Albert, Act. Phytopath. Acad. Sci. Hung. 12: 303--306. 1977; W. J. Park, Park Seeds Fls. & Veg. 1978: 90. 1977; A. R. Robbins, How Grow Annuals, ed. 2, 44, 82, 85, 181, 186, 200, [211]—216, 284--288, 290, 291, 296, & ad. 1977; Arora, Biol. Abstr. 66: 2513. 1978; Arora, Cytologia 43: 91, 92, 94, & 95, fig. 1B. 1978; Nagy & Albert, Biol. Abstr. 66: 1654. 1978; Pirone, Diseas. & Pests Ornament. Pl., ed. 5, 527. 1978; W. H. Warren, Garden 2 (4): 15. 1978.

Additional illustrations: Palmer & Fowler, Fieldb. Nat. Hist., ed. 2, 286. 1975; Walls, Comp. Book Greenh. Gard. 278. 1975; López-Palacios, Fl. Venez. Verb. [561], fig. 131. 1977; W. J. Park, Park Seeds Fls. & Veg. 1978: 90 [in color]. 1977; A. R. Robbins, How Grow Annuals, ed. 2, [211] & ad. 1977.

Robbins (1977) describes this hybrid as comprising two general types, a tall type with plants 12—15 inches tall and a dwarf type with plants 6—12 inches tall. The seeds should be planted 10 inches apart; germination time is 10—15 days. They will begin to bloom in 10 weeks, bloom until frost, and are generally half-hardy. Indoor or coldframe starting is not required and they can be transplanted, but there is usually no self-sow, and fall-sow is not recommended. The corolla colors include white, pink, rose, crimson, and many shades of blue from light to very dark, and pure lavender, mostly combined with white. Of the Hybrida grandiflora type there are some 50 varieties; the color is usually not completely fixed, so "a color listed in a catalogue as rose, for instance, may have every shade from almost white to deep pink flowers". She lists particularly: Annapolis Blue, a blend of light, medium, and dark blue flowers with a small white eye; Marilyn, a fiery cerise; Salmon Pink, soft salmon-pink; Snowy White, white; Beauty of Oxford Hybrids, clear rose-pink to deep rose-red with white eye; Lavender Glory, lavender-blue, with creamy-white eye; Sutton's Blue, deep royal-blue; and Royal Bouquet, of different more rigid upright growth to 18 inches, in many colors.

Of Dwarf Verbena she lists 4 main types: (1) Gigantea, 10-inch plants with semi-doubled ruffled flowers tightly clustered in a ball -- Ruffled White, with pure white, and Ruffled Pink, with delicate salmon-pink corollas; (2) Dwarf Sparkle: neat compact 8—10-inch plants completely covered with flowers -- Amethyst, mid-lavender-blue with white eye; Blaze, bright-scarlet heads 3 inches across; Crystal, white; Delight, coral-pink suffused with salmon; Sparkle, scarlet with white eye; Splendor, royal-purple with white eye; (3) Multiflora or Bush: 10—12 inches tall and a foot or more in diameter -- Firelight, solid red without any eye; Roselight, rose-pink with white eye; Salmon Queen, salmon-pink; Snow Queen, pure-white; Starlight, with blue with cream eye; (4) Rainbow:

early-flowering, dwarf, upright, 8--10 inches tall, mixed colors, mostly eyed. She gives detailed culture directions, suggested dates for planting, care and cultivation, uses, and planting combinations with other garden flowers.

Cleene & De Ley (1976) report that x*V. hybrida* is susceptible to infection by crown-gall, *Agrobacterium tumefaciens*. Greenwood (1977) reports infestation by *Aulacaspis pentagona* on the stems and leaves.

Pinkus says of his *no. 3*, cited below, that it is a "rangy purple" in color, while his *no. 4* is "red and a rather nice ornamental plant".

Park (1977) offers 3 general types of this verbena: (1) Sparkle type (neatest in habit) with Amethyst, Blake [illustrated], and Sparkle Mixed, (2) Bush type with Regalia Mixture and Spirit of '76 [illustrated], and (3) *Gigantea* Dwarf with Springtime Mixture [illustrated].

López-Palacios (1977) lists the phytochemistry as "en la *V. hybrida*, delfinidina-3,5-diglicósido, delfinidina-3monoglicósido y glucosa (?) en las flores". He cites from Venezuela the following collections: Federal District: *Lasser 3471*, *3480*; *Schnee 936*. Mérida: *López-Palacios 2212*; *Trujillo 6284*, *8047*. Táchira: *Fernández 896*. Trujillo: *Ruiz-Terán & López-Palacios 7602*. In a personal communication to me he reports the following vernacular names from Colombia and Venezuela: "verbena de jardín", "verbena extranjera", and "virginia".

Pirone (1978) lists the following diseases and pests as attacking the garden verbena: flower-blight (*Botrytis cinerea*), powdery mildew (*Erysiphe cichoracearum*), stem-rot (*Macrophomina phaseoli*), root-rot (*Pellicularia filamentosa*, *Phymatotrichum omnivorum*, and *Theilaviopsis basicola*). In addition, the species listed by him under *Verbena* as a genus probably also apply here.

Material of this hybrid has been misidentified and distributed in some herbaria as *V. ciliata* Benth.

Additional citations: ARIZONA: Pima Co.: *Gustafson s.n.* [Jan. 8, 1932] (Mi). CULTIVATED: Louisiana: *Pinkus 3* (Z), *4* (Z). Texas: *Lundell & Lundell 9763* (Ld).

VERBENA xILLICITA Moldenke

Additional bibliography: Mohlenbrock, Guide Vasc. Fl. Ill. 367. 1975; Moldenke, Phytologia 36: 228—229. 1977; Mohlenbrook & Ladd, Distrib. Ill. Vasc. Pl. [247] & 276. 1978.

Mohlenbrock (1975) says that in Illinois this hybrid occurs in "Low ground; scattered throughout the state".

Additional citations: ILLINOIS: Pike Co.: *Moldenke & Moldenke 31561* (Lc, Ld).

VERBENA INCISA Hook.

Additional bibliography: Sweet, Hort. Brit., ed. 3, 553. 1839;

Moldenke, Phytologia 36: 229—230, 240, 283, & 285. 1977.

Sweet (1839) calls this species the "cut-leaved vervain" and asserts that it was introduced into English gardens in 1836 from Santa Fé, Argentina.

The Ekman H.12615, distributed as V. incisa, actually is V. tenuisecta Briq.

Additional citations: ARGENTINA: Formosa: I. Morel 419 (Au--122313). Santa Fé: Terrible 366 (Au—122314).

VERBENA JORDANENSIS Moldenke

Additional bibliography: Moldenke, Phytologia 36: 230. 1977.

Additional citations: BRAZIL: Santa Catarina: Smith & Reitz 12479 (Au—249878).

VERBENA LACINIATA (L.) Briq.

Additional synonymy: Glandularia laciniata (Lam.) Speta, Candollea 23: 155. 1977.

Additional bibliography: Sweet, Hort. Brit., ed. 1, 1: 325 (1826) and ed. 3, 553. 1839; Moldenke, Phytologia 36: 230—232, 241, & 290. 1977; Speta, Candollea 32: 146 & 155. 1977; Moldenke, Phytologia 38: 386 & 401 (1978) and 39: 99. 1978.

Lindeman & Haas encountered this plant "in blown up sand at landward foot of isolated rock on the beach" and their no. 3758 is said by them to have had its corollas "purple (10P6/8)".

Sweet (1826) calls this species the "Erinus-like vervain" and asserts that it was introduced into English gardens from Peru in 1820.

Speta (1977) reports the presence of "Stapel quadratischer Plättchen" in the cell nuclei of this species as in V. canadensis (L.) Britton, which see for further details.

Additional citations: ECUADOR: Chimborazo: Asplund 20463 (Ld); Fagerlind & Wibom 837 (Ld). BRAZIL: Paraná: Lindeman & Haas 3758 (Ut--320413).

VERBENA LACINIATA var. CONTRACTA (Lindl.) Moldenke

Additional synonymy: Verbena erinoides β sabini D. Don ex Loud., Hort. Brit., ed. 2, 553. 1832.

Additional bibliography: Loud., Hort. Brit., ed. 2, 553. 1832; Sweet, Hort. Brit., ed. 3, 553. 1839; Moldenke, Phytologia 36: 231--232. 1977.

Sweet (1839) calls this plant "Sabine's vervain" and asserts that it was introduced into English gardens from Chile in 1830.

VERBENA LASIOSTACHYS Link

Additional bibliography: Sweet, Hort. Brit., ed. 1, 1: 325 (1826) and ed. 3, 553. 1839; Moldenke, Phytologia 36: 232—233 & 277. 1977.

Sweet (1826) calls this species the "woolly-spiked vervain" and dates its introduction to cultivation in English gardens from

California as 1823; V. prostrata, the "prostrate vervain", he says was introduced from "North America" in 1794.

It should be noted here that the V. prostrata var. glandulosa of Dunkle is a synonym of V. robusta Greene.

The Dunkle 8548, distributed as V. lasiostachys, actually is V. robusta Greene.

VERBENA LILACINA Greene

Additional bibliography: Moldenke, Phytologia 36: 233. 1977.

Davidson found this plant growing "in a narrow, shady, steep, rocky (metamorphic) canyon in sandy stream channel with some pockets of spring-fed water still remaining, associated with Trixis californica, Viguiera lanata, Verbesina peninsularis, Encelia californica asperifolia, Acalypha californica, and Simmondsia chinensis."

Additional citations: MEXICO: Baja Californica: Davidson 5495 (N).

VERBENA LITORALIS H.B.K.

Additional & emended synonymy: Verbena caracasana H.B.K., Nov. Gen. & Sp. Pl., ed. folio, 2: 223. 1817. Verbena caracassana Humb. & Bonpl. ex Steud., Nom. Bot. Phan., ed. 1, 872. 1821. Verbena caracasana Humb. ex Spreng. in L., Syst. Veg., ed. 16, 2: 748. 1825. Verbena caracassana H.B.K. ex Cham., Linnaea 7: 255. 1832. Verbena caracasana Humb. & Bonpl. ex Steud., Nom. Bot., ed. 2, 2: 750. 1841. Verbena caracasana Humb. & Kunth ex D. Dietr., Syn. Pl. 3: 601. 1843. Verbena caracasana Kunth ex Schau. in A. DC., Prodr. 11: 542, in syn. 1847. Verbena litoralis var. caracasana (H.B.K.) Briq., Ann. Conserv. & Jard. Bot. Genèv. 7-8: 292. 1904. Verbena littoralis var. leptostachya Schau. ex Briq., Ann. Conserv. & Jard. Bot. Genèv. 7-8: 292, in syn. 1904. Verbena litoralis var. caracasana Briq., Ann. Conserv. & Jard. Bot. Genèv. 7-8: 292. 1904; Moldenke, Prelim. Alph. List Inv. Names 47, in syn. 1940. Verbena litoralis var. caracasana (Kunth) Briq. ex Moldenke, Suppl. List Inv. Names 25, in syn. 1947. Verbena littoralis var. caracassana Briq. ex Moldenke, Résumé 369, in syn. 1959. Verbena carascana H.B.K. ex Moldenke, Phytologia 34: 278, in syn. 1976.

Additional bibliography: Sweet, Hort. Brit., ed. 3, 768. 1839; Kuntze, Rev. Gen. Pl. 2: 510. 1891; Rojas Acosta, Cat. Hist. Nat. Corrient. 206. 1897; Perez-Arbelaez, Fl. Util. Colomb., ed. 1, 441 (1947) and ed. 2, 745. 1956; García Barriga, Fl. Med. Colomb. 2: 512—513. 1975; Dantas Barreto, Fontes, Ramos Lopes, Rainha, Rozeira, Da Silva, Pinto da Silva, & Teles, Agron. Lusit. 37: 167—188. 1976; Dantas Barreto, Fontes, Ramos Lopes, Rainha, Rozeira, Da Silva, Pinto da Silva, & Teles, Biol. Abstr. 63: 1849. 1977; López-Palacios, Fl. Venez. Verb. 559, 560, 563--571, 653, &

656, fig. 132 & 133. 1977; Moldenke, Biol. Abstr. 64: 4787. 1977; Moldenke, Phytologia 36: 233--237, 277, 281, 298, & 462. 1977; Van der Werff, Bot. Notiser 130: 96. 1977; Dodson & Gentry, Selbyana 4: 578, 580, 581, 605, & 628, pl. 272C. 1978; Mejias, Act. Bot. Venez. 13: 304. 1978; Moldenke, Biol. Abstr. 65: 71. 1978; Moldenke, Phytologia 38: 259. 1978.

Additional illustrations: García Barriga, Fl. Med. Colomb. 2: 513. 1975; López-Palacios, Fl. Venez. Verb. [561], fig. 132. 1977; Dodson & Gentry, Selbyana 4: 581, pl. 272C. 1978.

Sweet (1839) avers that this species was introduced into cultivation in British gardens from South America in 1832.

Recent collectors have encountered this plant in cleared fields and "trochas of finca", at the "upper edge of marsh meadow", and in subxerophytic microthermic habitats, at altitudes of 1020--3603 meters, flowering and fruiting in May, October, and December, and refer to it as 2 meters tall. The corollas are said to have been "purple" on Kirkbride 2428 and Sousa & Diego 1471, "blue" on Breedlove 10855, 12618, & 14429, Contreras 2635 & 3088, Kral 27566, Ruiz Huidobro 3883, and Ton 1054, "rose" on Toni 5663, "lavender-purple" on Howell 8882, "violet, ca. white in tube" on MacBryde 949, and "tube violet, limb lilac" on Cuatrecasas 22877.

Mejias (1978) records the species from Monagas, Venezuela, and lists the vernacular name, "verbena". Other collectors list "verbena del litoral". López-Palacios, in a personal communication to me, says "'Verbena', 'Verbena blanca', a los que deben agregarse los de 'Verbena chiquita' y 'Espina de raya', que García-Barriga, o.c.: 511 y 512 señala para V. hispida R. & P., taxa no señalada en Colombia y de imposible ocurrencia en los Llanos Orientales. Las dos citas que alli se aducen para tierras altas, corresponde la una, Pérez-Arbelaez 1207 a Ve. valerianoides HBK, y la otra, Triana 3685 a V. trifida HBK."

Cuatrecasas 22877 seems to represent an extra large-leaved form, while Howell 8882 exhibits uniformly very small leaves and Howell 8959 extra stiff leaves. López-Palacios, in a letter to me dated May 16, 1977, says that his no. "4332", cited by me in a previous installment of these notes, should be "4232". In his 1977 work he cites the following collections from Venezuela: Aragua: Benítez 911; Chardon 182; Fernández 543; Holt 376; Moldenke & Moldenke 19550; Montilla 11; Trujillo s.n. Barinas: Karsten s.n. Falcón: Agostini & Agostini 1130; Lasser & Foldats 2987. Federal District: Alston 5430; Bailey & Bailey 352; Burkart 16019; Eggers 13053; Fernández 823; Funck 570; Humboldt & Bonpland 638; Kuntze 1263; Lasser 725; Linden 334; Moritz 811; Pittier 9732; Potter 5100; Schnee 405; Tamayo 737; Vogl 182. Lara: Benítez 236; Mocquerys 893; Saer 829; Smith V.147; Trujillo 2587. Mérida: Breteler 3056; Gehriger 219, 533; Ginés 4685; Hanbury-Tracy 24, 256; Jahn 535; Lasser 415; Lasser & al. 4467; Linden 334; López-Palacios 2035, 3175; López-Palacios &

Bautista 3431; Oberwinkler 12196; E. Reed 610; Ruiz-Terán 172, 5988; Ruiz-Terán & López-Figueiras 8548; Ruiz-Terán & López-Palacios 1903, 6617; Trujillo 7755, 7866, 8012, 8124, 8346; Vareschi & al. 1610. Miranda: Agostini 172, 487; Barros s.n.; Benítez 722; Holt 441; Moldenke & Moldenke 19562. Portuguesa: Burkart 17069. Sucre: Funck 54, 325, 637. Trujillo: Burkart 16815; De Bellard s.n.; Ginés 4312; Ruiz-Terán & López-Palacios 7400. Yaracuy: Foldats 2047; Trujillo & Fernández 768. Zulia: Mocquerys 893; Plée 56. State undetermined: Grosourdy s.n. He comments that "aunque no haya registro de otros estados, con seguridad existe en todos ellos." He also notes that Troncoso regards Mocquerys 893 as V. glabrata H.B.K.

Dodson & Gentry (1978) cite Dodson & al. 5695 from Los Ríos, Ecuador, while Walker (1976) cites Walker 8103 & 8127 from Okinawa.

Material of V. litoralis has been misidentified and distributed in some herbaria as V. "hispidula R. & P." On the other hand, the Stutzenbaker 205, distributed as V. litoralis, actually is V. brasiliensis Vell., while Correll & Correll 39002 is V. halei Small, J. Taylor 17625 is V. parvula Hayek, and Meebold 26897 is V. scabra Vahl.

Additional citations: MEXICO: Chiapas: Breedlove 10855 (Ld), 12618 (Ld), 14429 (Ld); Ton 1054 (Ld). Jalisco: R. Kral 27566 (W—2825923). Michoacán: Hinton 12869 (N). Tamaulipas: Richardson 199 (Ld), 371 (Ld). Veracruz: Sousa & Diego 1471 (Ld). GUATEMALA: El Petén: Contreras 2635 (Au—228054), 3088 (Au—228026). COSTA RICA: San José: J. Taylor 17446 (Ld). COLOMBIA: Magdalena: Kirkbride 2428 (N). Valle del Cauca: Cuatrecasas 14447 (W—2773000), 20663 (W—2817213), 22877 (W—2817657). ECUADOR: Los Ríos: MacBryde 949 (W—2812896). GALAPAGOS ISLANDS: Albemarle: Howell 8959 (W—2814446). Charles: Howell 8882 (W—2814445). PERU: Cuzco: Brunel 135 (W—2788546). BRAZIL: Minas Gerais: Toni 5663 (N). CHILE: Tarapaca: Zöllner 9609 (Ld). ARGENTINA: Córdoba: Balegno 893 (Au—122323). Corrientes: Krapovickas, Cristóbal, Arbo, Maruñak, Maruñak, & Irigoyen 16634 (Ld); Ruiz Huidobro 3883 (N). Formosa: Krapovickas, Mroginski, & Fernández 19562 (Ld). MOUNTED CLIPPINGS: Walker, Fl. Okin. & South. Ryuk. 884. 1976 (W).

VERBENA LITORALIS var. ALBIFLORA Moldenke

Additional bibliography: Moldenke, Phytologia 36: 237. 1977.

López-Palacios, in a personal communication to me, comments that "Moldenke dice en Phytologia 10: 76 (traduzco): "Se le registra con el nombre vernaculo de 'Verbena blanca' que inadvertidamente di para la especie típica en mi Supplementary list of common and vernacular names en 1940". Pero resulta que en Colombia se llama 'Verbena blanca' a la típica litoralis para distinguirla de ciertas Stachytarphetae (principalmente S. cayennensis) a las que se denomina 'Verbena negra'."

Additional citations: MEXICO: Chiapas: Breedlove 9458 (Ld).

VERBENA LOBATA Vell.

Additional bibliography: Moldenke, Phytologia 36: 237—238 & 308. 1977.

Hatschbach & Landrum refer to this plant as an herb with lilac corollas and found it growing in wet soil of capoeira, flowering in October.

Additional citations: BRAZIL: Paraná: Hatschbach & Landrum 40425 (Ld).

VERBENA LONGIFOLIA Mart. & Gal.

Additional bibliography: Moldenke, Phytologia 36: 238. 1977.

Contreras refers to this species as an herb of wet land. The corollas are said to have been "lilac" on Contreras 6152 and "white to pale-pink" on Ernst 2355a. The plant has been found in flower and fruit in January and September. Material has been misidentified and distributed in some herbaria as V. officinalis L.

Additional citations: MEXICO: Oaxaca: Ernst 2355a (W--2798517). GUATEMALA: El Petén: Contreras 6152 (Ld).

VERBENA LONGIFOLIA f. ALBIFLORA Moldenke

Additional bibliography: Moldenke, Phytologia 36: 238. 1977.

This plant has been found in flower and fruit in July and materials has been misidentified and distributed in some herbaria as V. officinalis L.

The corollas on Ernst 2355a, cited under typical V. longifolia (above), are said to have been "white to pale-pink" when fresh, so this collection may better be listed under the present form.

Additional citations: GUATEMALA: El Quiché: Contreras 5247 (Ld, Ld).

VERBENA MACDOUGALII Heller

Additional bibliography: Moldenke, Phytologia 36: 238—239. 1977.

Barrell encountered this plant in association with Rhus trilobata and Glycyrrhiza in crevices of volcanic country rock outcroppings, at 8000 feet altitude, flowering in August.

Additional citations: COLORADO: Conejos Co.: W. A. Weber 7865a (Au--122329). Gunnison Co.: Barrell 218-65 (W--2809834). NEW MEXICO: Otero Co.: Correll & Correll 39216 (Ld). ARIZONA: Apache Co.: Crutchfield 2089 (Ld).

VERBENA MACROSPERMA Speg.

This taxon is now regarded as synonymous with V. sulphurea var. intermedia Kuntze, which see.

VERBENA MARITIMA Small

Additional bibliography: Moldenke, Phytologia 36: 239—240 & 453.

1977; Poppeton, Shuey, & Sweet, Fla. Scient. 40: 384. 1977; Craig, Proc. Fla. State Hortic. Soc. 90: 109. 1978.

Recent collectors describe this species as a sprawling plant growing in open sandy soil, flowering in March. The corollas are said to have been "dark-red" on B. M. Davis s.n. [Apr. 9, 1933] and "lavender" on Correll & al. 49514. Craig (1978) reports finding the plant on about 3 percent of the coastal dunes sites studied by him in southeastern and southwestern Florida. His work is mis-dated "1977" on its title-page.

Additional citations: FLORIDA: Palm Beach Co.: Correll, Correll, Austin, & Eckenwalder 49514 (N). Volusia Co.: B. M. Davis s.n. [Apr. 9, 1933] (Mi).

VERBENA MEDICINALIS Rojas

Additional bibliography: Moldenke, Phytologia 36: 240. 1977.

Rojas Acosta (1897) calls this plant the "verbena del incordio", but fails to provide us with a description.

VERBENA MEGAPOTAMICA Spreng.

Additional bibliography: Moldenke, Phytologia 36: 240. 1977.

The V. Marunak 134, distributed as V. megapotamica, actually is V. phlogiflora Cham.

VERBENA MENDOCINA R. A. Phil.

Additional bibliography: Moldenke, Phytologia 36: 240—241. 1977; Markgraf & D'Antoni, Pollen Fl. Argent. 20 & 99. 1978

Markgraf & D'Antoni (1978) describe the pollen of this species as "Tricolporate, scabrate. Grain prolate-spheroidal, 26 x 25 um. Exine 1.5 um thick. Pore lalongate 6 x 2 um, protruding, margo 6 um wide, colpus narrow. Polar A o.5, amb sub-angular", based on Lagiglia 29 from Mendoza, Argentina. It is suspected that "um" here is intended to be "mu".

VERBENA MENTHAEFOLIA Benth.

Additional bibliography: Moldenke, Phytologia 36: 241, 244, & 277. 1977.

Breedlove encountered the very small-leaved form of this species on "slopes with Quercus, Cnidoscolus, Guazuma, Disopyros, Luehea, and Plumeria", at 1000 meters altitude, flowering and fruiting in August. The corollas are said to have been "blue" on Breedlove 27018.

Additional citations: MEXICO: Chiapas: Breedlove 10457 (Ld), 11161 (Ld), 27018 (Ld, N). Durango: H. M. Parker 647 (Ld). México: Pringle 8534 (Ld).

VERBENA xMOECHINA Moldenke

Additional bibliography: Mohlenbrock, Guide Vasc. Fl. Ill. 366. 1975; Moldenke, Phytologia 36: 242 & 307. 1977; Mohlenbrock & Ladd, Distrib. Ill. Vasc. Pl. [247] & 276. 1978.

[to be continued]